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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,348	11/14/2003	Seiji Katsuoka	2003_1648A	1190

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EXAMINER

EDWARDS, LAURA ESTELLE

ART UNIT	PAPER NUMBER
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1734

DATE MAILED: 02/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/712,348

Applicant(s)

KATSUOKA ET AL.

Examiner

Laura Edwards

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-71 is/are pending in the application.
- 4a) Of the above claim(s) 1-6, 8, 11-17, 20, 21, 24-27, 30-32 and 34-71 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 9, 10, 18, 19, 22, 23, 28, 29 and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 May 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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Election/Restrictions

Applicant's election without traverse of Group IV, claims 7, 9, 10, 18, 19, 22, 23, 28, 29, and 33 in the reply filed on 12/1/04 is acknowledged.

Claim Rejections - 35 USC § 112

Claims 7, 9, 10, 18, and 33 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, line 10, "the opening" lacks antecedent basis.

In claim 9, line 11, "the opening" lacks antecedent basis.

In claim 10, line 8, "the opening" lacks antecedent basis.

In claim 18, line 8, "the opening" lacks antecedent basis.

In claim 33, line 6, "the opening" lacks antecedent basis.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 19 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Hongo et al (US 6,294,059).

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Hongo et al teach a substrate processing apparatus comprising a loading/unloading area (1, 9) for loading and unloading a substrate; a cleaning area (10) for cleaning the substrate; and a plating area (2, 2') for plating the substrate, wherein the cleaning area is provided with a pre-cleaning unit (11) for cleaning the substrate before plating in the plating area, the plating area is provided with a pretreatment unit (3, 4) for pretreating the substrate before plating by bringing a treatment liquid into contact with the substrate, and the plating area is provided with a plating unit for plating the pretreated substrate, and plurality of spray nozzles (186) for spraying a liquid for treatment or cleaning of a processing surface of the substrate are mounted in at least one of said units, said spray nozzles being disposed such that the liquid for treatment or cleaning can be sprayed uniformly onto the entire processing surface of the substrate.

With respect to claim 28, the plating and cleaning areas including there units are set forth as noted above and spray nozzles (186) are disposed in the cleaning area in a cleaning unit. The claim are presently recited does not require spray nozzles within the plating processing tank.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al (US 6,294,059) in view of Japanese Patent No. 11-350148 (Hitachi).

Hongo et al teach a substrate processing apparatus comprising a loading/unloading area (114a, 114b) for carrying in and out a substrate; cleaning area (160) for cleaning the substrate; and a plating area (119) provided with a plurality of plating units (see col. 12, lines 41-43) for plating the substrate, wherein the plating area is provided with a plating solution supply device (see Fig. 12, no detailed disclosure or numbering) with plating solution being somehow supplied to each tank. Hongo et al are silent concerning the use of plural supply pumps for supplying plating solution to a given plating unit. However, it was known in the art at the time the invention was made to provide a fluid supply arrangement including plural pumps for supplying plating solutions to a given plating unit for quality control purposes (i.e., regulation of composition, density, control of plating film thickness) as evidenced by Hitachi (see abstract and Figs. 1-3). It would have been obvious to one of ordinary skill in the art to provide individual pumps as taught by Hitachi to supply plating solution to each plating tank in the apparatus of Hongo et al for quality control purposes.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al (US 6,294,059) in view of Nystrom (US 3,916,937) or Pellegrino (US 4,174,261).

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Hongo et al teach a substrate processing apparatus comprising a loading/unloading area (114a, 114b) for carrying in and out a substrate; cleaning area (160) for cleaning the substrate; and a plating area (119) provided with a plating unit for plating the substrate, wherein the plating area is provided with a plating solution supply device (see Fig. 12, no detailed disclosure or numbering) with plating solution being somehow supplied to a tank. Hongo et al are silent concerning the use of a vertical centrifugal pump. However, it was known in the art, at the time the invention was made, to utilize a vertical centrifugal pump in association with a plating unit to supply the plating liquid to the unit as evidenced by Nystrom (see pump 12) or Pelligrino (see pump 34). In light of the conventional use of a centrifugal type pump with a plating system as evidenced by Nystrom or Pelligrino, it would have been within the purview of one skilled in the art to provide the Hongo et al supply device with a centrifugal type pumping system.

Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hongo et al (US 6,294,059) in view of Jacobs et al (US 3,489,608).

Hongo et al teach a substrate processing apparatus comprising a loader/unloader area (1, 9), a cleaning area (10) including a precleaning unit (11), and a plating area (2, 2') including a pretreating unit (3, 4). While Hongo et al teach that nozzles (186) are used to treat the substrate in the cleaning area, Hongo et al are silent concerning the use of nozzles capable of treating and/or cleaning the substrate and the treating the housing or vessel holding the substrate therein. However, it was known in the art, at the time the invention was made to provide within a treating vessel for a substrate, nozzles for applying chemical or cleaning liquids to a substrate so as to enable treating or cleaning of the substrate as well as treating or cleaning the interior of the

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housing or vessel as evidenced by Jacobs et al (see col. 5, lines 42-64). In light of the teachings of Jacobs et al, it would have been obvious to one of ordinary skill in the art to provide a spray nozzle within at least one of housings or vessels used to treat the substrate so as to enable simultaneous treatment of the substrate and cleaning of the vessel within a single area so as to minimize substrate processing time.

Allowable Subject Matter

Claims 7, 9, 10, 18, and 33 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Claim 7 would be allowable because there is no teaching or suggestion in the prior art a substrate processing apparatus comprising the combination of a loading/unloading area for carrying in and out a substrate; a cleaning for cleaning the substrate; and a plating area for plating the substrate, wherein the cleaning area is provided with a pre-cleaning unit including a vessel housing a first treatment liquid spraying section for cleaning the substrate before plating in the plating area by bringing a first treatment liquid into contact with the substrate, a lid member for closing an opening of the vessel after the substrate held in a substrate holding device is moved to above the opening, and a second treatment liquid spraying section mounted on the lid member for cleaning the substrate by bringing a second treatment liquid into contact with substrate while the opening of the vessel is closed with the lid member.

Claim 9 would be allowable because there is no teaching or suggestion in the prior art a substrate processing apparatus comprising the combination of loading/unloading area for

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carrying in and out a substrate; cleaning area for cleaning the substrate; and a plating area for plating the substrate, wherein the plating area provided with first pretreatment unit and second pretreatment unit, each unit including a vessel housing first treatment liquid spraying section for pretreating the substrate before plating by bringing a first treatment liquid into contact with the substrate, a lid member for closing an opening of the vessel after the substrate held in a substrate holding device is moved to above the opening, and a second treatment liquid spraying section mounted on the lid member for cleaning the substrate by bringing a second treatment liquid into contact with the substrate while the opening of the vessel is closed with the lid member.

Claim 10 would be allowable because there is no teaching or suggestion in the prior art a substrate processing apparatus comprising the combination of loading/unloading area for carrying in and out a substrate; a cleaning area for cleaning the substrate, and a plating area for plating the substrate, wherein the plating area is provided with a plating unit including a processing tank for holding a plating solution, a lid member for closing an opening of the processing tank after the substrate held in a substrate holding device is moved to above the opening, and a treatment liquid spraying section mounted on the lid member for cleaning the substrate by bringing a cleaning liquid into contact with the substrate while the opening of the processing tank is closed with the lid member.

Claim 18 would be allowable because there is no teaching or suggestion in the prior art a substrate processing apparatus comprising the combination of loading/unloading area for a cleaning area for cleaning the substrate; and a plating area for plating the substrate, wherein the

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plating area is provided with a plurality of plating units, each plating unit including a processing tank for holding a plating solution, a lid member for closing an opening of the processing tank after the substrate held in a substrate holding device is moved to above the opening, and a treatment liquid spraying section mounted on the lid member for cleaning the substrate by bringing a cleaning liquid into contact with the substrate while the opening of the processing tank is closed with the lid member.

Claim 33 would be allowable because there is no teaching or suggestion in the prior art a substrate processing apparatus comprising the combination of loading/unloading area for a cleaning area for cleaning the substrate; a plating area for plating the substrate; wherein the plating area is provided with a pretreatment unit for pretreating the substrate before plating by bringing a treatment liquid into contact with the substrate, said pretreatment unit, including; a processing tank for holding a plating solution, a lid member for closing an opening of the processing tank after the substrate held in a substrate holding head is moved to above the opening, and a treatment liquid spraying section mounted on the lid member for spraying a cleaning liquid onto the substrate to clean the substrate while the opening of the processing tank is closed with the lid member, said substrate fixing head being provided with a tilting mechanism.


Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura Edwards whose telephone number is (571) 272-1227. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Laura Edwards
Primary Examiner
Art Unit 1734

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February 18, 2005